

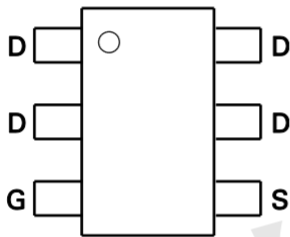
General Features

- $V_{DS} = 20V, I_D = 7A$
- $R_{DS(ON)} = 23m\Omega \text{ typ @ } V_{GS}=2.5V$
- $R_{DS(ON)} = 28m\Omega \text{ typ @ } V_{GS}=4.5V$

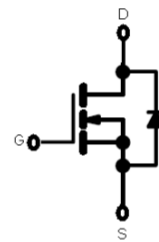
Application

- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable
- Logic Level Shift

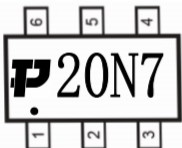
Package and Pin Configuration



Circuit diagram



Marking:



“P” is TECHPUBLIC LOGO
“20N7” Marking ID

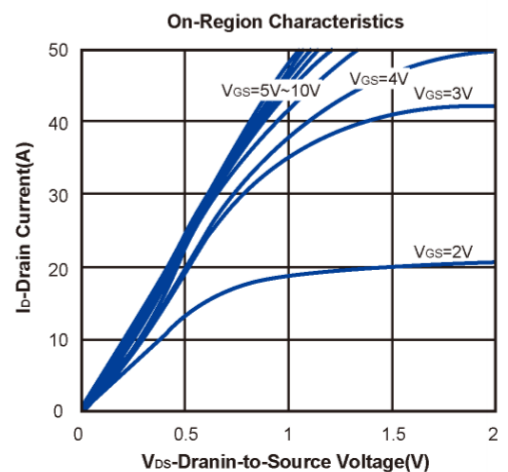
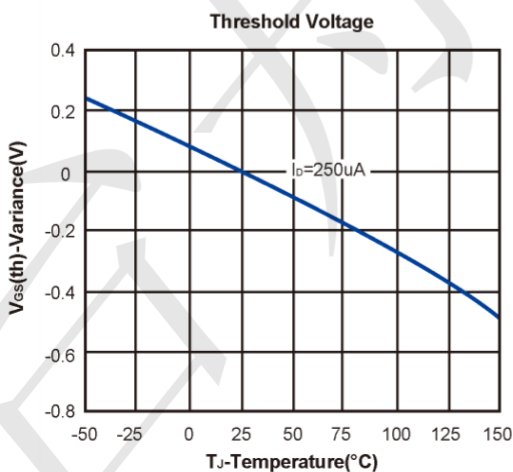
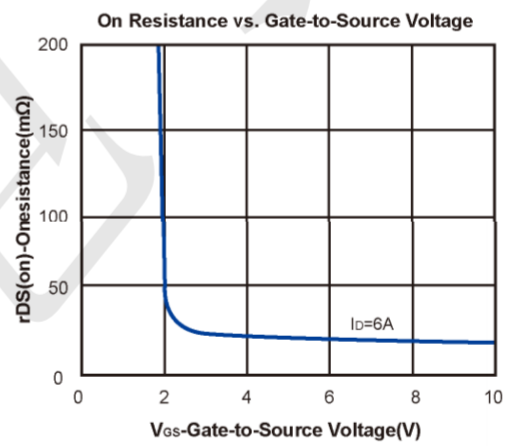
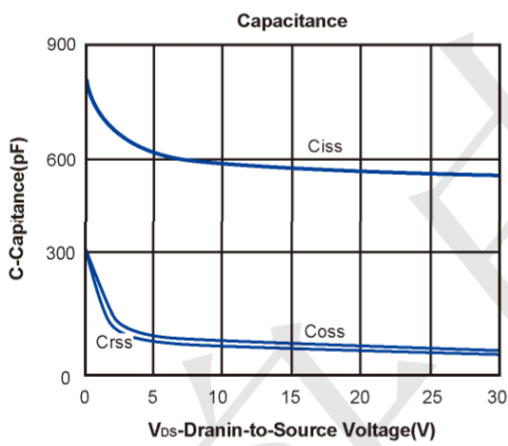
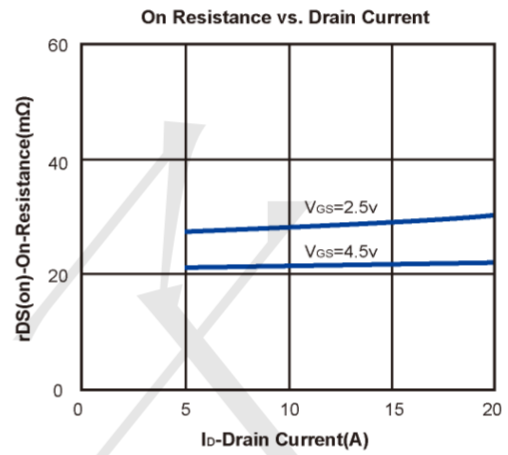
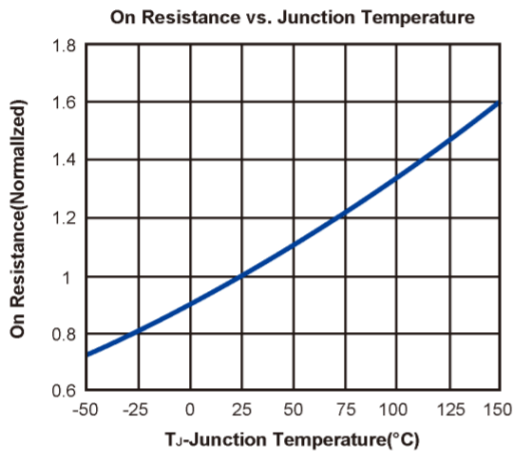
Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------------|------------|--------------|
| Drain-Source Voltage | V_{DS} | 20 | V |
| Gate-Source Voltage | V_{GS} | ± 12 | |
| Continuous Drain Current | I_D | 7 | A |
| Pulsed Drain Current | I_{DM} | 20 | |
| Power Dissipation | P_D | 2.0 | W |
| Thermal Resistance from Junction to Ambient ($t \leq 5s$) | $R_{\theta JA}$ | 62.5 | $^\circ C/W$ |
| Operating Junction | T_J | 150 | $^\circ C$ |
| Storage Temperature | T_{STG} | -55 ~ +150 | |

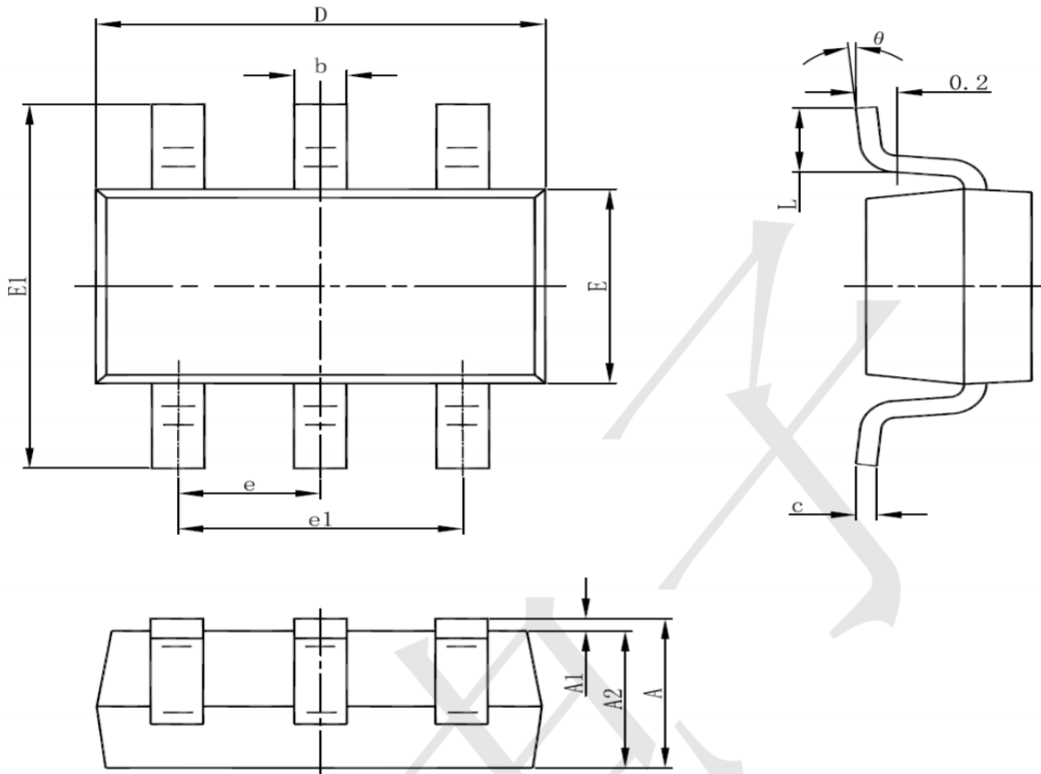
Electrical Characteristics (T_A=25°C unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Units |
|---|----------------------|---|------|-------|-------|-------|
| Static | | | | | | |
| Drain-source breakdown voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D = 10μA | 20 | | | V |
| Gate-threshold voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 50μA | 0.40 | | 1 | |
| Gate-body leakage | I _{GSS} | V _{DS} = 0V, V _{GS} = ±8V | | | ±100 | nA |
| Zero gate voltage drain current | I _{DSS} | V _{DS} = 20V, V _{GS} = 0V | | | 1 | μA |
| Drain-source on-resistance ^a | r _{DS(on)} | V _{GS} = 4.5V, I _D = 6A | | 0.023 | 0.028 | Ω |
| | | V _{GS} = 2.5V, I _D = 5.2A | | 0.028 | 0.035 | |
| Forward transconductance ^a | g _{fs} | V _{DS} = 5V, I _D = 3.6A | | 8 | | S |
| Diode forward voltage | V _{SD} | I _S = 0.94A, V _{GS} = 0V | | 0.74 | 1.2 | V |
| Dynamic | | | | | | |
| Total gate charge | Q _g | V _{DS} = 10V, V _{GS} = 4.5V, I _D = 3.6A | | 7.7 | 10 | nC |
| Gate-source charge | Q _{gs} | | | 0.32 | | |
| Gate-drain charge | Q _{gd} | | | 2.1 | | |
| Input capacitance ^b | C _{iss} | V _{DS} = 15V, V _{GS} = 0V, f = 1MHz | | 1310 | | pF |
| Output capacitance ^b | C _{oss} | | | 140 | | |
| Reverse transfer capacitance ^b | C _{rss} | | | 60 | | |
| Switching^b | | | | | | |
| Turn-on delay time | t _{d(on)} | V _{DD} = 10V, R _L = 5.5Ω, I _D ≈ 3.6A, V _{GEN} = 4.5V, R _g = 6Ω | | 78.7 | | ns |
| Rise time | t _r | | | 128 | | |
| Turn-off delay time | t _{d(off)} | | | 453 | | |
| Fall time | t _f | | | 80.9 | | |

Typical Electrical and Thermal Characteristics



SOT23-6 Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E | 1.500 | 1.700 | 0.059 | 0.067 |
| E1 | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950(BSC) | | 0.037(BSC) | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |